Printed Pages: 02 **Sub Code: NCS601 / ECS601**

Paper Id: 110250 **Roll No.** | | | | | | | | | | |

B TECH
(SEM-VI) THEORY EXAMINATION 2018-19
COMPUTER NETWORKS

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. Consider a noiseless channel with a bandwidth of 3000 Hz transmitting a signal with four signal levels. What is the maximum bit rate?

b. A bit string **00011111110011111101000** needs to be transmitted at the data link layer. What is the string actually transmitted after bit stuffing?

c. Write four differences between circuit switching and packet switching.

d. Sketch Manchester and differential Manchester encoding for the following bit stream: 10111100010010011101

e. Write two use of subnet mask.

f. What do you mean by DNS?

g. What are the services of Transport Layer?

h. What are the major advantages of using optical fiber over twisted pair cable?

i. Taking p=5, q=11, d=27 in RSA. Find the value of e.

j. Convert the IPv4 address whose hexadecimal representation is C22F15B2 to dotted decimal notation. What is the class of this address?

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. What do you mean by network architecture? What should be their design issues? Explain briefly.

b. Explain the working of pure ALOHA and slotted ALOHA protocols. How slotted ALOHA improve the performance of pure ALOHA?

c. What do you mean by adaptive and non-adaptive routing algorithm? Discus Distance Vector Routing including count to infinity problem.

d. Discuss TCP window management in detail. Also explain silly window syndrome and their solution.

e. Discuss different types of transmission media with their advantages and disadvantages.

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Differentiate OSI and TCP/IP reference model. Which one is more popular and why?

(b) Suppose a signal travels through a transmission medium then find:

i) The attenuation (loss of power) if the power is reduced to one half.

ii) The amplification (gain of power) if the power is Increased 10 times.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) List different carrier sense protocols. How CSMA/CD protocol is different from other CSMA/CA protocol?

(b) What do you mean by transmission impairment? Explain different types of transmission impairment.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) What is Congestion? Differentiate between congestion control and flow control with example. Also discuss congestion prevention policies.

(b) Sketch the IP header neatly and explain the functions of each field. What are the deficiencies of IPV4 over IPV6?

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) An organization is granted a block 211.17.180.0 /24. The administrator wants to create 32 subnets

i) Find the subnet mask.
ii) Find the number of addresses in each subnet.
iii) Find the first & last address in subnet 1.
iv) Find the first & last address in subnet 32.

(b) The symbols & their frequencies are given below

Symbol	A	B	C	D	E	F	G	H
Frequency	20	18	16	15	15	10	4	2

Construct Huffman codes.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Encrypt "EXTRANETPLANETSOURCE" using a transposition cipher with the following key:

3 5 2 1 4

(b) Explain the following:

(i) Telnet
(ii) FTP
(iii)SNMP
(iv)HTTP
(v) MIME